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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/507,270	02/18/2000	Edward Ellis Eibling	07007.00013	8023
30594	7590	03/30/2004	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 8910 RESTON, VA 20195			DEPPE, BETSY LEE	
			ART UNIT	PAPER NUMBER
			2634	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/507,270	EIBLING ET AL.	
	Examiner Betsy L. Deppe	Art Unit 2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 22 January 2004.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-14 and 16-20 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) 11-14 and 16-20 is/are allowed.

6) Claim(s) 1-10 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.

 If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

- Certified copies of the priority documents have been received.
- Certified copies of the priority documents have been received in Application No. _____.
- Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____	6) <input type="checkbox"/> Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see page 10, filed 22 January 2004, with respect to the rejection(s) of claim(s) 1-10 under 35 USC 112, first paragraph have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, new ground(s) of rejection are made.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Scaling a signal to "the full scale range" in claim 1, line 7 and claim 6, line 6 does not make sense. Scaling a signal results in a single value and a "range" usually includes a plurality of values. Therefore, the recited limitation renders the claim vague and indefinite.

Based on the applicant's remarks and the detailed description, it appears that "the full scale range" in claim 1, line 7 and claim 6, line 6 should be "a value within the full scale range" or "use the full scale range." Similarly, in claim 3, line 8, it appears that "the full scale range" should be "an I value within the full scale range" or "use the

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full scale range" and in claim 3, line 12, "the full scale range" should be "a Q value within the full scale range" or "use the full scale range."

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1 and 6 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Chow et al. (US Patent No. 5,623,513), assuming that "the full scale range" in claims 1 and 6 should be "a value within the full scale range. Figure 5 of Chow et al. discloses the scaler (28) and the digital-to-analog converter (14). It is inherent that the scaled signal falls within the full range scale of the digital-to-analog converter.

6. Claims 1, 3, and 5-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Mandyam (US Patent No. 6,535,564 B1, cited in the Office Action mailed April 17, 2003, Paper No. 3), assuming that "the full scale range" in claims 1, 3 and 6 should be "a value within the full scale range."

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7. With regard to claims 1, 3 and 5, Figure 1 of Mandyam discloses the claimed invention including a first and second multiplier (108 and 110) in the digital data stream before the a first and second digital-to-analog converter (114 and 112) wherein the transmitter is a Code Division Multiple Access transmitter. (See column 2, lines 27-48 and 51-52 and column 3, line 21 – column 5, line 2) Although Mandyam does not explicitly disclose a multiplier for scaling the digital signal, it is implicit that scaling is achieved by multiplication since it teaches rescaling the analog signal by multiplication (see column 2, line 43-48 and column 6, lines 52-54) Furthermore, it is inherent that the scaled signal falls within the full range scale of the digital-to-analog converter.

8. With regard to claims 6 and 7, Mandyam discloses the claimed invention including applying a digital gain to the I component and Q component of a signal (108 and 110), converting the signal with the digital gain into analog form (114 and 112) and transmitting it. (See column 2, lines 27-48 and 51-52 and column 3, line 21 – column 5, line 2)

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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10. Claims 1, 3, and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mandyam, assuming that the "to the full range scale" in claims 1, 3 and 6 should be "to use the full scale range."

11. With regard to claims 1, 3 and 5, Figure 1 of Mandyam discloses the claimed invention including a first and second multiplier (108 and 110) in the digital data stream before the a first and second digital-to-analog converter (114 and 112) wherein the transmitter is a Code Division Multiple Access transmitter. (See column 2, lines 27-48 and 51-52 and column 3, line 21 – column 5, line 2) Although Mandyam does not explicitly disclose a multiplier for scaling the digital signal, it is implicit that scaling is achieved by multiplication since it teaches rescaling the analog signal by multiplication (see column 2, line 43-48 and column 6, lines 52-54)

Furthermore, since Mandyam discloses making the use of the full conversion range of a digital-to-analog converter (see column 1, lines 55-62), it would have been obvious to one of ordinary skill in the art at the time the invention was made to scale the signal to a full range scale in order to maximize DAC conversion while avoiding clipping noise.

12. With regard to claims 6 and 7, Mandyam discloses the claimed invention including applying a digital gain to the I component and Q component of a signal (108 and 110), converting the signal with the digital gain into analog form (114 and 112) and transmitting it. (See column 2, lines 27-48 and 51-52 and column 3, line 21 – column 5, line 2)

13. Claims 1 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow et al. (US Patent No. 5,623,513), assuming that the "to the full range scale" in claims 1 and 6 should be "to use the full scale range." Figure 5 of Chow et al. discloses the scaler (28) and the digital-to-analog converter (14). Chow et al. does not explicitly disclose scaling the signal to use the full range scale of the DAC. Since Chow et al. discloses making the use of the full conversion range of a digital-to-analog converter (see column 2, lines 33-46), it would have been obvious to one of ordinary skill in the art at the time the invention was made to scale the signal to a full range scale in order to maximize DAC conversion while avoiding clipping noise.

14. Claims 2, 4, 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mandyam as applied to claims 1 and 6 above, and further in view of Yang (US Patent No. 6,504,862 B1, cited in the Office Action mailed April 17, 2003, Paper No. 3). Mandyam discloses the claimed invention except for a peak-to-rms ratio reducer for constraining the signal peaks of the signal with the digital gain.

Figures 1 and 2 of Yang disclose using a peak-to-rms ratio reducer (i.e. error shaped BF clipper 10) to constrain the signal peaks of a CDMA signal. (See column 1, lines 12-15; column 2, lines 26-57) It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the peak-to-rms ratio reducer disclosed by Yang after the adaptive scaler in Mandyam in order to ensure that the scaled signal is not distorted after amplification by the power amplifier. If the amplitude of the scaled signal exceeds the linear domain of the power amplifier, the power

amplifier generates a distorted output signal thereby introducing noise and affecting the accuracy of data recovery. By adding a peak-to-rms ratio reducer, the transmitter will not transmit a distorted signal thereby enabling more accurate data recovery.

Allowable Subject Matter

15. Claim 10 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.
16. Claims 11-14 and 16-20 are allowable over prior art.

Conclusion

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Betsy L. Deppe whose telephone number is (703) 305-4960. The examiner can normally be reached on Monday, Tuesday and Thursday (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (703) 305-4714. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Betsy L. Deppe
Primary Examiner
Art Unit 2634